

Victorian collections and authentic material of *I. fulvotagens* it may be found desirable to name it as a new species.

Collections examined: Quarry Glen, Turton's Track, Otway Range, on fallen mossy log, K. & G. Beaton 62, Apr. 1964; Melba Gully near Laver's Hill, Victoria, on fallen log in wet area, G. Beaton E0255, Feb. 1963.

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The Breeding Time and Growth Rate of *Sepia apama*. (Mollusca: Cephalopoda)

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Very little is known about the breeding times or growth rates of the cuttles found in Victorian waters.

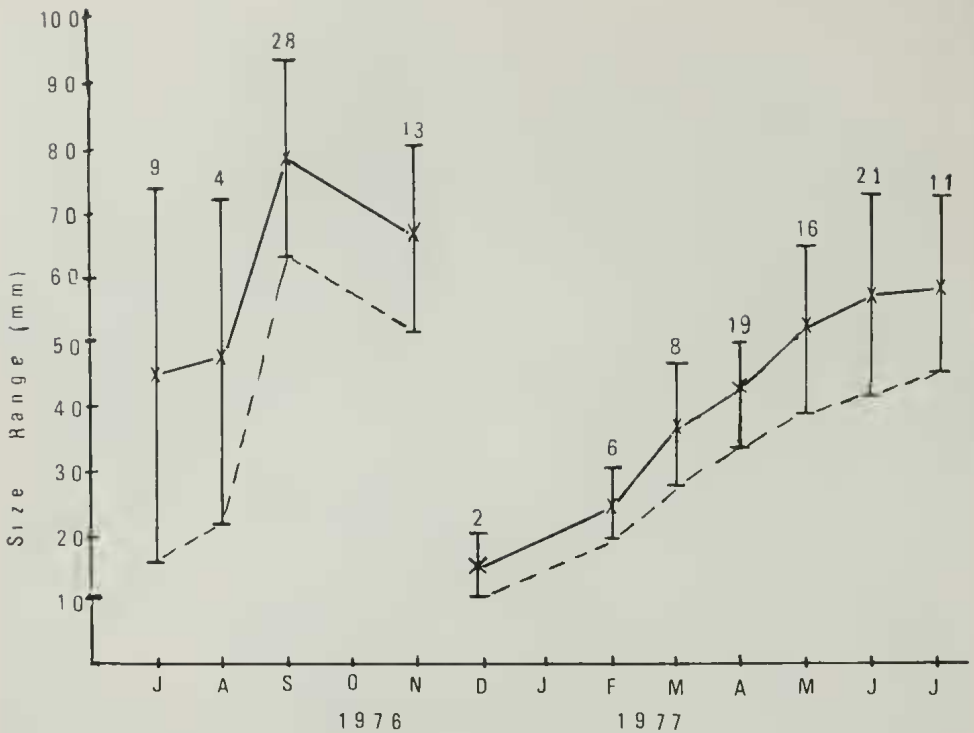
From July 1976 to July 1977 a large collection of beach stranded sepions of cuttles was made from Collendina, Ocean Grove, Vict. These were for a study to be undertaken on the physical variation of the sepions within the various species to be found in Victoria.

Sepia apama is the most common and largest cuttle to be found in Victoria

(Bell and Plant, 1977). A large number of juvenile sepions were collected (N=139). Juveniles of *apama* are those sepions less than 100 mm in length; this length is based upon the width/length ratio of the sepions which shows a marked change at $l=100$ mm.

The percentage of juveniles in the fauna fluctuated even though specimens were present each month. There is a wide range in size each month but it was found that the average size of the sepions increased steadily month to month. Also the smallest size present increased steadily, as shown in the

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The monthly size range variations in juveniles of *Sepia apama*, with the number of juveniles present.

figure. The growth rate can be estimated from both the smallest sepions and from the average (arithmetic mean) sizes. These estimates are 6 mm per month and 12 mm per month respectively. Considering the chance nature of the preservation and of the collecting these figures are in good agreement. If we assume an average growth rate of 10 mm/month it indicates that specimens take 10 to 12 months to reach adult size.

The figure also shows quite clearly the abrupt change in size during December-January. This indicates that breeding i.e. hatching, takes place in November-December since it is known that cuttles grow rapidly when very small (Denton and Gilpin-Brown, 1961).

The growth rates found in this study may be compared with those found by Choe (1963). In laboratory reared animals of *Sepia esculenta* and *S.*

subaculeata he found rates varying from 15 mm to 30 mm/month. These are much higher than that for *apama* but may be accounted for, in part, by the regular feeding in the laboratory and the subsequent less energy loss compared to the need to capture the food with the wild specimens.

The largest specimen of *apama* collected had a length of 460 mm, indicating an age of about 4 years at least. Whether animals begin breeding at age one year or later, or even breed for several seasons is not known and must await detailed field and laboratory studies.

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